

**In the Claims:**

**Claim 1** (presently amended) A catalyst for oxygen reduction comprising a ruthenium sulfide ~~chemically stable in a hydrochloric environment in the presence of dissolved chlorine and optionally of dissolved oxygen~~ supported on a conductive support.

**Claim 2** (presently amended) The catalyst of claim 1 wherein said ~~ruthenium sulfide is supported on a~~ the conductive ~~inert~~ support ~~optionally consisting of~~ is a conductive carbon having a surface area exceeding 120 g/m<sup>2</sup>.

**Claim 3** (presently amended) The catalyst of claim 2 wherein said conductive carbon is ~~Vulcan XC-72~~ a carbon black having a surface area exceeding 120 g/m<sup>2</sup>.

Cancel **Claim 4.**

**Claim 5** (presently amended) The catalyst of claim ~~4~~ 1 obtained by incipient wetness impregnation of said ~~carbon~~ support with an aqueous solution of precursor salts of ruthenium, optionally comprising ruthenium chloride, ~~evaporating the solvent~~ drying the impregnated support and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 6** (presently amended) The catalyst of claim ~~4~~ 3 obtained by aqueous

precipitation of a ruthenium oxide on said carbon, drying and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 7** (presently amended)      The catalyst of claim 1 wherein said sulfide ~~has the formula  $Ru_xM_yS$ , M being~~ is a ternary sulfide and a transition metal M.

**Claim 8** (presently amended)      The catalyst of claim 7 wherein said transition metal M is selected from the group consisting of Co, Ni, Re, Cr, Mo and Ir.

**Claim 9** (presently amended)      The catalyst of claim 1 wherein said sulfide is a sulfide of cobalt and ruthenium,  $Ru_xCo_yS$  supported on carbon.

**Claim 10** (previously presented)      The catalyst of claim 9 wherein the atomic ratio Ru:Co is comprised between 0.2 and 5.

**Claim 11** (presently amended)      The catalyst of claim 7 obtained by incipient wetness impregnation of said ~~carbon~~ conductive support with an aqueous solution of precursor salts, optionally chlorides, of ruthenium and of transition metal M, ~~evaporating the solvent~~ drying said impregnated support and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 12** (presently amended)      The catalyst of claim 9 obtained by incipient

wetness impregnation of ~~said~~ carbon support with an aqueous solution of precursor salts of ruthenium and of cobalt, ~~evaporation the solvent~~ drying said impregnated carbon and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 13** (previously presented)      The catalyst of claim 12 wherein said precursor salts comprise at least one of  $\text{RuCl}_3$  and  $\text{Co}(\text{NO}_3)_2$ .

**Claim 14** (presently amended)      The catalyst of claim 11 wherein said ~~solvent~~ aqueous solution of precursor salts comprises 2-propanol.

**Claim 15** (presently amended)      The catalyst of claim 11 wherein said ~~solvent evaporation~~ drying step is carried out under vacuum at a temperature above  $90^\circ\text{C}$ .

**Claim 16** (previously presented)      The catalyst of claim 11 wherein said treatment under an atmosphere of hydrogen sulfide is carried out in a flow reactor.

**Claim 17** (previously presented)      The catalyst of claim 11 wherein said treatment under an atmosphere of hydrogen sulfide is carried out at a temperature exceeding  $100^\circ\text{C}$ .

**Claim 18** (previously presented)      The catalyst of claim 11 wherein said

treatment under an atmosphere of hydrogen sulfide is protracted for a time exceeding thirty minutes.

**Claim 19** (previously presented) The catalyst of claim 11 wherein said inert carrier gas is nitrogen and the molar ratio of said nitrogen sulfide is comprised between 0.5 and 4.

**Claim 20** (previously presented) A gas diffusion electrode comprising a conductive web wherein the catalyst of claim 1 is applied on at least one face of said conductive web.

**Claim 21** (previously presented) The gas diffusion electrode of claim 20 wherein said conductive web is a carbon cloth.

**Claim 22** (previously presented) The gas diffusion electrode of claim 20 wherein said catalyst is mixed with an optionally perfluorinated hydrophobic binder.

**Claim 23** (previously presented) A method for producing a catalyst for oxygen reduction comprising the steps of subjecting a conductive support to incipient wetness impregnation with a solution containing at least one precursor of ruthenium, drying the impregnated support and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 24** (previously presented)      The method of claim 23 wherein said solution also contains a precursor of a transition metal.

**Claim 25** (previously presented)      The method of claim 24 wherein said transition metal is selected from the group consisting of Co, Ni, Re, Cr, Mo and Ir.

**Claim 26** (previously presented)      The method of claim 25 wherein said solution contains at least one  $\text{RuCl}_3$  and  $\text{Co}(\text{NO}_3)_2$ .

**Claim 27** (previously presented)      The method of claim 26 wherein the molar ratio of Ru:Co in said solution is comprised between 0.2 and 5.

**Claim 28** (previously presented)      The method of claim 23 wherein said solution comprises 2-propanol.

**Claim 29** (previously presented)      The method of claim 23 wherein said drying is carried out under vacuum at a temperature above  $90^\circ\text{C}$ .

**Claim 30** (previously presented)      A method for producing a catalyst for oxygen reduction comprising the steps of precipitating a ruthenium oxide on a conductive support dispersed in an aqueous solution, drying the impregnated support and treating the resulting product under an atmosphere of hydrogen sulfide optionally diluted with an inert carrier gas.

**Claim 31** (previously presented)      The method of claim 23 wherein said treatment under an atmosphere of hydrogen sulfide is carried out in a flow reactor.

**Claim 32** (previously presented)      The method of claim 23 wherein said treatment under an atmosphere of hydrogen sulfide is carried out at a temperature exceeding 100°C.

**Claim 33** (previously presented)      The method of claim 23 wherein said treatment under an atmosphere of hydrogen sulfide is protracted for a time exceeding thirty minutes.

**Claim 34** (previously presented)      The method of claim 23 wherein said inert carrier gas is nitrogen and the molar ratio of said nitrogen to said hydrogen sulfide is between 0.5 and 4.

**Claim 35** (previously presented)      The method of claim 30 wherein said ruthenium oxide is RuO<sub>2</sub> precipitated by reacting an aqueous solution containing a ruthenium compound, optionally RuCl<sub>3</sub>, with sodium acid carbonate, or by reacting ruthenium sulfite acid with hydrogen peroxide.

**Claim 36** (previously presented)      A method for producing a gas diffusion electrode of claim 20 comprising coating said conductive web on at least one side thereof with said catalyst optionally mixed with a first hydrophobic binder.

**Claim 37** (previously presented)      The method of claim 36 wherein said conductive web is a carbon cloth.

**Claim 38** (previously presented)      The method of claim 36 wherein said first hydrophobic binder is perfluorinated.

**Claim 39** (previously presented)      The method of claim 36 wherein said conductive web is coated with a mixture of carbon powder and a second optionally perfluorinated hydrophobic binder on at least one side thereof, prior to said coating with said catalyst.

**Claim 40** (previously presented)      The method of claim 36 further comprising a final sintering step.

**Claim 41** (previously presented)      The method of claim 40 wherein said final sintering step comprises heating under a hydrogen atmosphere from room temperature up to an intermediate temperature, and subsequently heating under an inert atmosphere from said intermediate temperature up to a final temperature.

**Claim 42** (previously presented)      The method of claim 41 wherein said intermediate temperature is between 100 and 120°C.

**Claim 43** (previously presented)      The method of claim 41 wherein said

final temperature is between 300 and 350°C.

**Claim 44** (previously presented)      The method of claim 41 wherein said inert atmosphere is an argon atmosphere.

**Claim 45** (presently amended)      ~~In a depolarized~~ A process of hydrochloric acid ~~depolarized~~ electrolysis cell, ~~the improvement comprising using an oxygenated~~ assembling the gas diffusion cathode of claim 20 as the cathode of electrolysis cell fed in an aqueous solution hydrochloric acid and supplying oxygen thereto while applying electrical current.

**Claim 46** (newly presented)      The catalyst of claim 10 wherein the atomic ratio is 2.8 to 3.2.

**Claim 47** (newly presented)      The catalyst of claim 17 wherein the temperature is between 300 and 500°C.

**Claim 48** (newly presented)      The catalyst of claim 18 wherein the time is 1 to 4 hours.